Deployed Developmental Testers — ATEC's Experimental Test Pilots in *Operations Enduring* and *Iraqi Freedom*

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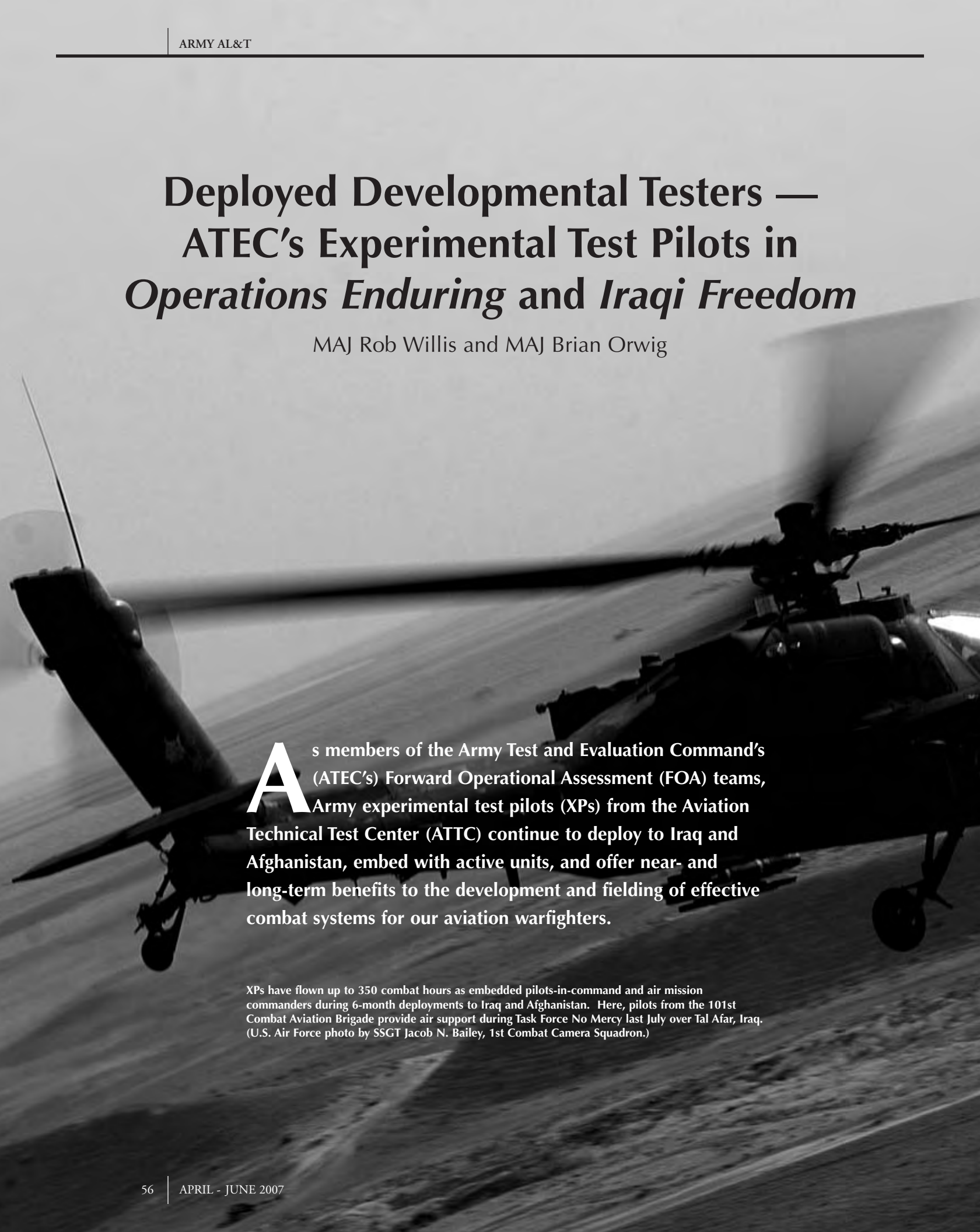

As members of the Army Test and Evaluation Command's (ATEC's) Forward Operational Assessment (FOA) teams, Army experimental test pilots (XPs) from the Aviation Technical Test Center (ATTC) continue to deploy to Iraq and Afghanistan, embed with active units, and offer near- and long-term benefits to the development and fielding of effective combat systems for our aviation warfighters.

XPs have flown up to 350 combat hours as embedded pilots-in-command and air mission commanders during 6-month deployments to Iraq and Afghanistan. Here, pilots from the 101st Combat Aviation Brigade provide air support during Task Force No Mercy last July over Tal Afar, Iraq. (U.S. Air Force photo by SSGT Jacob N. Bailey, 1st Combat Camera Squadron.)

Although some XPs have prior backgrounds as maintenance test pilots, instructor pilots, safety officers and armament officers, the job is not about maintenance or logistics — it's about mission. And despite the advanced engineering degrees held by most, a hangar full of protractor-wielding Microsoft® Excel wizards isn't sufficient to ensure that a new flight control system, weapon or software version will be suitable for use in a multi-mission combat environment.

A typical aviation test team includes flight test engineers, instrumentation technicians, program management (PM) personnel, manufacturer representatives and many others. It is critical that somebody in this group understand the warfighter's perspective — the end user who will ultimately employ the system going head-to-head with the enemy. There is simply nothing that can supplant recent firsthand combat experience and extended face-to-face living with an operational unit. ATTC is now entering its sixth FOA deployment cycle with its ninth and tenth deployed XP.

ATTC deploys its testers as ATEC FOA team members, who rotate every 6 months. FOA team members represent all branches, and collect feedback on newly fielded systems, from improvised explosive device-sniffing robots to the Command Post of the Future. However, ATTC XPs are the only members so far on the FOA Team who are both embedded data collectors and *embedded operators*, flying and fighting with the host unit. This participation in the FOA mission highlights ATTC's greatest resource — the unique skills and capabilities of its people.

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Direct Support in Theater

The FOA XPs provide significant direct support benefits to their hosting units, addressing a myriad of rapid fielding initiatives and aviation airworthiness issues. The deployed XP provides the hosting combat aviation brigade an organic force modernization officer "with teeth." He is an "in-person" liaison representing both the testing and acquisition communities, facilitating communications with PM offices, the Aviation Engineering Directorate (AED) and equipment manufacturers. When an AH-64D Apache helicopter unit arrived in theater with a unit-purchased gun-mounted laser pointer in early 2005, the embedded XP coordinated with PM Longbow Apache and AED to have the system formally tested and certified, quickening its integration into the fight. When a 701D engine hot-start anomaly surfaced with deployed UH-60L Black Hawks, an embedded XP staffed the approval of a new engine starting procedure, and then provided instruction to all affected Black Hawk units in theater.

Many deployed aviators will attest that training on newly fielded systems coincided with numerous simultaneous predeployment activities. In past cases, including the UH-60 Black Hawk and CH-47 Chinook Common Missile Warning System (CMWS), Blue Force Tracking, and the Lot 8 and Lot 9.1B Longbow Apache helicopters, fielding and training was somewhat hastily conducted immediately prior to the units loading aircraft onto ships. Embedded XPs who had been directly involved in the testing of such systems can aid in the understanding of new functionalities and the

An embedded XP was instrumental in developing new engine starting procedures for UH-60L Black Hawks after 701D engine hot-start anomalies surfaced in theater. Here, UH-60 Black Hawk crews from 2nd Squadron, 6th Cavalry Regiment, benefit from the new procedures as they lift off from Forward Operating Base McHenry, Iraq, last November. (U.S. Army photo by SFC Michael T. Guillory, 982nd Signal Co. (Combat Camera).)

XPs who were directly involved in testing of the CH-47 Chinook CMWS were instrumental in training deployed aircrews on systems' functionalities and in developing corresponding TTPs while deployed in theater. Here, 10th Mountain Division (Light) Soldiers load equipment/supplies into a CH-47 Chinook helicopter following a search and seizure mission in the mountainous region near Landikheyl, Afghanistan, last November. (U.S. Army photo by CPL Bertha A. Flores, 55th Signal Co. (Combat Camera).)

in-theater development of tactics, techniques and procedures (TTPs). The first combat deployment of the much-anticipated Modernized Target Acquisition and Designation System is currently underway, and ATTC has an XP embedded with the only unit employing it. In these ways, recent, robust flight-test experience can augment the New Equipment Training process.

With in-theater operations tempo doubling or tripling normal garrison annual flying hours, brigade and battalion commanders also seem to welcome the free pilot labor, especially given that the additional aviators, usually majors and chief warrant officers, have typically completed 2,000-3,000 hours of pilots-in-command (PC), instructor pilots and/or maintenance test pilots. XPs have returned from 6-month deployments having contributed up to 350 combat hours as PC and air mission commanders. Although they integrate into the host unit's Aircrew Training Program to fly those hours in their primary aircraft, the XPs are cross-qualified in numerous rotary- and fixed-wing aircraft, and are indeed at the service of all battalion commanders for many other critical functions.

CONUS-Based Global War On Terrorism (GWOT) Test Support

Since January 2005, eight ATTC XPs have supported six divisions/task forces and embedded to fly UH-60L, AH-64D and OH-58D Kiowa helicopters in Iraq, as well as UH-60L and AH-64A helicopters in Afghanistan. This broad experience base with regard to systems, missions and environments is invaluable to feedback into ongoing GWOT test and development programs. Upon returning to ATTC, the XPs reintegrate into their "real jobs," performing test planning, executing and reporting, but with a broader perspective on the results' operational relevance.

The enhancement to mission-focused testing in support of GWOT is arguably most significant in the attack-reconnaissance mission, where the field manuals have practically been rewritten. As today's attack pilot veterans will confirm, typical missions don't include handfuls of helicopters hovering abreast while targeting tanks at 5 kilometers. Instead, teams of two aircraft constantly move and communicate with ground forces in urban terrain, and aircrews are challenged to employ targeting sensors and weapons at much

closer ranges and higher velocities than before. Firsthand experience with these TTPs enables the XP and test team to craft more relevant test matrices.

Getting the developmental test right is especially crucial in evaluating new systems that don't have dedicated operational testing (OT) events programmed. New tactical lasers, engine barrier filters, heat-seeking missile defense systems and other survivability modifications are all examples of recent GWOT requirements without OT events. During initial testing of the AH-64D Apache CMWS, the use of representative mission profiles in the testing matrix revealed alarming and previously unknown system limitations. A portion of the system was subsequently redesigned and is being retrofitted for deployed units. In a separate survivability test program, in-house combat experience and a continued close relationship with the tactical community led to the tweaking of the test matrix to reflect current TTPs in support of the maiden deployment.

XPs represent a low-supply, high-demand resource in the test community, providing host units with direct acquisition support while facilitating ongoing development of GWOT programs and transformation efforts.

Supporting Army Transformation

Incorporating recent combat experience into Army transformation programs is crucial for the future success of many systems. Final designs of many transformational systems are most able to be influenced during the developmental stages of the acquisition life cycle. Experiences and insights from FOA deployments have already proven invaluable in the development and test planning stages of Apache Block III crewstation design, unmanned aerial system control and integration, digital communications developments and the UH-60M Black Hawk upgrade program. Not surprisingly, the ATTC commander assigned a redeployed OH-58D Kiowa Warrior XP as the upcoming test director for the YRH-70A Armed Reconnaissance Helicopter, which is currently undergoing system evaluations and developmental testing.

XPs represent a low-supply, high-demand resource in the test community, and there is a near-term opportunity cost in pulling them out of their day job to deploy for six months. But in doing so, they contribute to ATEC's critical FOA mission, providing host units with direct acquisition support while facilitating ongoing development of GWOT programs and transformation efforts. This initiative is already helping to ensure that new aircraft, weapons and systems are better tailored to meet combatant commanders' and warfighters' collective needs in today's and tomorrow's fight.

An AH-64 Apache helicopter ATTC XP crew conducts mission-focused CMWS flare separation testing in September 2005. (ATTC photo by Paul Reynolds.)

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